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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,708	08/25/2003	Alfred Ecker	038741.52686US	9822

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CROWELL & MORING LLP
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EXAMINER

LEE, PATRICK J

ART UNIT PAPER NUMBER

2878

DATE MAILED: 11/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/646,708

Applicant(s)

ECKER ET AL.

Examiner

Patrick J. Lee

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5-12,15,17,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-12,15,17,19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This action is in response to amendment filed October 17, 2006.

Drawings

2. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the figures submitted on April 4, 2006 have handwritten labels. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 7, 10-12, 17, & 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,525,796 to Haake in view of US 5,945,665 to Hay.

With respect to claim 1, Haake discloses a device for testing a metallic workpiece in the form of wing (12) comprising: fiber optic element (16) as an optical fiber integrated into the workpiece (12); and groove (40) as a recess formed into workpiece (12) for the optical fiber (16) to be embedded into it such that recess (40) has a matching breadth and depth with the optical fiber (16) (see Haake figure 5). However, Haake does not explicitly disclose the use of a Bragg grating sensor in the optical fiber (16). Hay discloses the use of a Bragg grating (20) in use with a fiber (24) to determine strain. To modify the teachings of Haake with those of Hay would be obvious to one of ordinary skill in the art because such would allow for improved sensitivity of transmission of force fluctuations to the sensors (see Hay column 4, lines 10-13).

With respect to claim 7, the modified Haake discloses the fiber (16) to be arranged substantially without curvature (see Haake figure 5).

With respect to claims 10-11, the modified Haake discloses the use of this sensing device on an airplane wing, which would constitute a dynamically loaded component.

With respect to claim 12, Haake discloses a device for testing a metallic workpiece in the form of wing (12) comprising: fiber optic element (16) as an optical fiber integrated into the workpiece (12) to perform the step of arranging an optical fiber

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in a region of a surface of the workpiece; and groove (40) as a recess formed into workpiece (12) for the optical fiber (16) to be embedded into it such that recess (40) has a matching breadth and depth with the optical fiber (16) for the step of integrating the optical fiber into the surface of the workpiece (see Haake figure 5). However, Haake does not explicitly disclose the use of a Bragg grating sensor in the optical fiber (16). Hay discloses the use of a Bragg grating (20) in use with a fiber (24) to determine strain. To modify the teachings of Haake with those of Hay would be obvious to one of ordinary skill in the art because such would allow for improved sensitivity of transmission of force fluctuations to the sensors (see Hay column 4, lines 10-13).

With respect to claims 17 & 20, the modified Haake does not explicitly disclose the design of the workpiece as a blade of a turbine or a housing of a turbine, but such would have been obvious to one of ordinary skill in the art as an intended use of the device as such would be subject to similar conditions as the wing (12).

With respect to claim 19, the modified Haake does not explicitly disclose the arrangement using different curvatures, but such would have been obvious to one of ordinary skill in the art because such would allow for the sensing device to better fit the workpiece.

6. Claims 5-6, 8-9, & 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,525,796 to Haake in view of US 5,945,665 to Hay, and in further view of US 6,600,149 B2 to Schulz et al.

The combination of teachings of Haake with those of Hay discloses the device as described in the discussion of claims 1, 7, 10-12, 17, & 19-20 above.

With respect to claim 5, the use of a second optical fiber is not explicitly disclosed, but such is disclosed by Schulz et al in figure 17 through the use of multiple optical fiber sensors (2003, 2005, 2007) in wing (2001). To modify the teachings of Haake accordingly would have been obvious to one of ordinary skill in the art because such would allow for measurement over more area of the workpiece.

With respect to claim 6, the use of a different curvature is not explicitly disclosed, but such would have been obvious to one of ordinary skill in the art because such would allow for coverage of the area of the workpiece.

With respect to claim 8, the modified Haake illustrate in Schulz et al figure 17, the use of sensors in such a way that a first section is angled off from a second section of fiber.

With respect to claim 9, the modified Haake does not explicitly disclose the arrangement of the fiber on the workpiece such that one fiber has a curved section of approximately 90 degrees and another section of approximately 180 degrees. To modify the teachings of Haake accordingly would allow monitoring over a wide area with fewer detector-emitter arrangements.

With respect to claim 15, the modified Haake do not explicitly disclose the geometrical configuration to be different from other fibers. Schulz et al disclose in figure 17 a linear arrangement to fit the different pieces of an airplane wing. However, to modify the teachings of Haake accordingly would have been obvious to one of ordinary skill in the art because such would allow for the application of the sensing device to

objects that are not completely flat and to allow for expansion of the area over which the device is able to sense the environment.

Response to Arguments

7. Applicant's arguments with respect to claims 1, 5-12, 15, 17, & 19-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (571) 272-2440. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

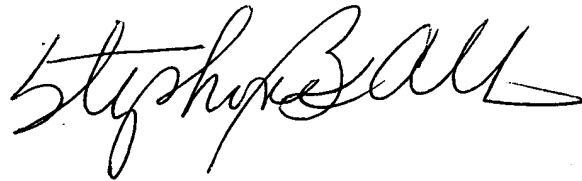
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Patrick J. Lee
Examiner
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PJL
November 1, 2006

A handwritten signature in black ink, appearing to read "Stephone B. Allen". The signature is written in a cursive, flowing style with a large, stylized "S" at the beginning and a long horizontal stroke at the end.

Stephone B. Allen
Primary Examiner